

DEPARTMENT OF AGRICULTURE
CANADA

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

(F. TORRANCE, B.A., D.V.S.)

FOR THE

YEAR ENDING MARCH 31, 1916

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA

J. DE LABROQUERIE TACHÉ

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1917

REPORT

OF

THE VETERINARY DIRECTOR GENERAL

OTTAWA, March 31, 1916.

SIR,—I have the honour to present my report as Veterinary Director General for the year ending March 31, 1916.

The absence of a considerable number of our veterinary inspectors, and other members of our staff, who have joined the colours, has rendered us somewhat short-handed. Notwithstanding this difficulty, the work of the branch has not been neglected in any way. Our officers have shown their willingness to do more than their duty, and have enabled us, by their diligence, to overcome the handicap of scarcity of workers.

To all the members of our staff I desire to express my appreciation of the loyal service they have given to our branch during the emergencies that have arisen.

Progress has been made in the control of contagious diseases, foot-and-mouth disease has been kept out of our borders, and new methods have been inaugurated with success.

The Meat Inspection Division has had a particularly busy year, owing to the great increase in the export of dressed meats caused by the war, full particulars of which are given herewith.

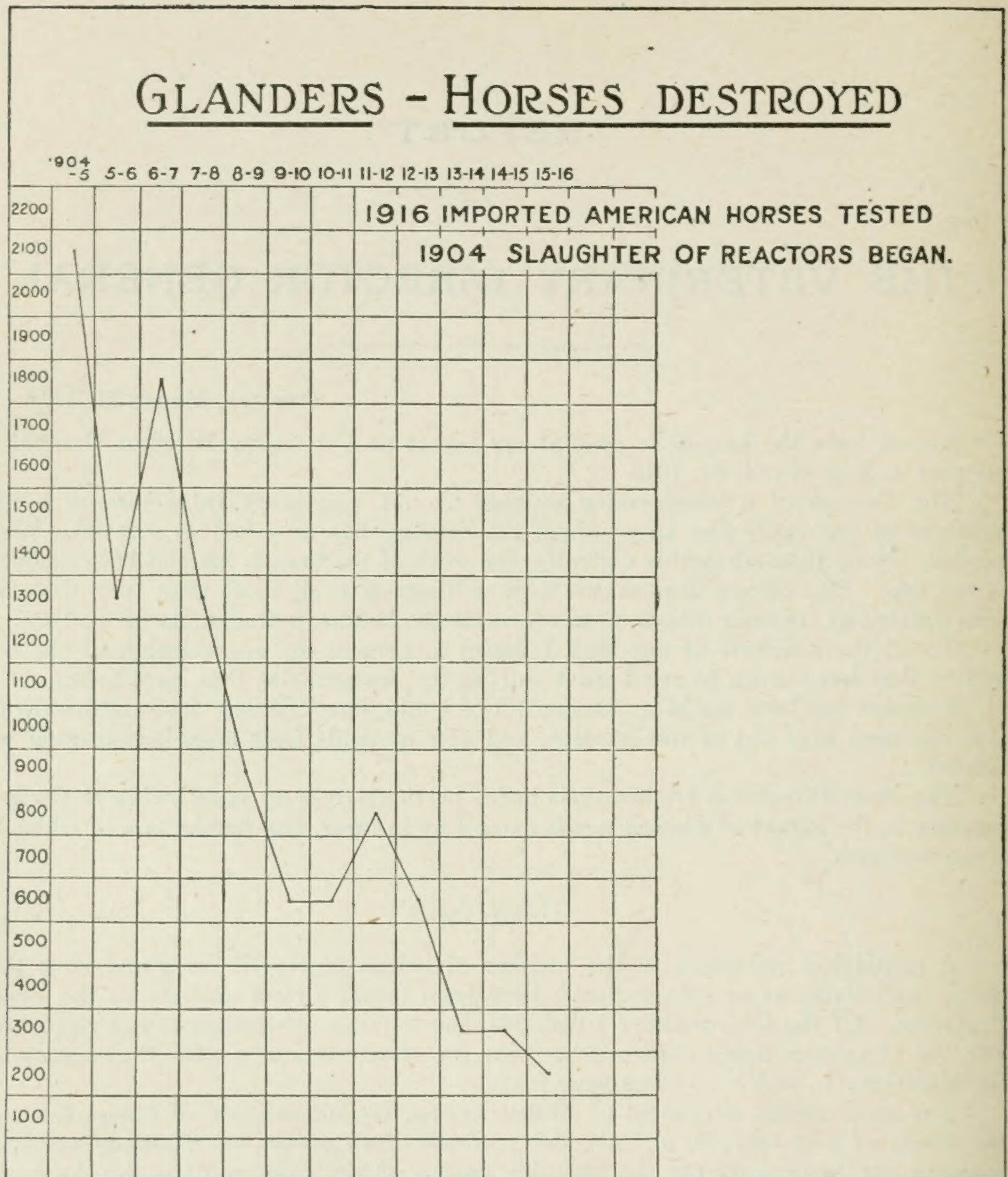
GLANDERS.

A gratifying reduction in the number of horses destroyed for glanders is to be noted; and these, as in former years, have been found almost entirely in the Prairie Provinces. Of the total number killed, 241, the province of Saskatchewan contributed 191, the remainder being scattered between the other provinces, with the exception of the Maritime, in which no cases were found.

The more recent settlement of Saskatchewan, the importation of horses to supply the wants of new settlers, and the delay which often occurs in reporting suspicious cases to our inspectors, are the probable causes of the number of outbreaks in this province.

Eleven reactors were detected among American horses tested by our officers at the border. These were refused admittance to Canada and returned to the United States to be dealt with according to their laws.

	No. Horses Destroyed.	Compensation Paid.
1906..	1,387	\$108,045
1907..	1,881	142,057
1908..	1,324	102,868
1909..	981	73,386
1910..	627	48,686
1911..	666	57,122
1912..	853	77,439
1913..	638	60,271
1914..	338	35,556
1915..	330	34,556
1916..	226	21,548



DOMINION.

4 killed on inspection.
 209 " at first test.
 27 " " second test.
 1 " " fourth test.

241 (valued at \$34,655, at a cost of \$23,102.76).

67 showed clinical symptoms.

7,523 horses were tested with mallein, of which 237 reacted and were destroyed. Of the 237 reactors, 67 showed clinical symptoms of glanders at or during the test.

95 horses are under control for retest.

Of the above 237 horses slaughtered 8 were killed without compensation.

SESSIONAL PAPER No. 15b

NOVA SCOTIA.

41 horses were tested and proved to be healthy.

NEW BRUNSWICK.

79 horses were tested and proved to be healthy.

QUEBEC.

3 killed on inspection.

12 " at first test.

15 (valued at \$1,920, at a cost of \$1,279.99).

13 showed clinical symptoms.

119 horses were tested with mallein, of which 12 reacted and were destroyed. Of the 12 reactors, 10 showed clinical symptoms of glanders at or during the test.

Of the 15 horses slaughtered—

2 were in the electoral district of Montmagny.

3 " " " " " " Bellechasse.

1 was " " " " " " Terrebonne.

4 were " " " " " " Jacques Cartier.

2 " " " " " " Montreal.

3 " " " " " " Beauce.

15

ONTARIO.

5 killed at first test.

2 " " second test.

7 (valued at \$1,250, at a cost of \$833.31).

3 showed clinical symptoms.

69 horses were tested with mallein, of which 7 reacted and were destroyed. Of the 7 reactors, 3 showed clinical symptoms of glanders at or during the test.

2 horses are under control for retest.

Of the 7 horses slaughtered—

6 were in the electoral district of Renfrew, S.R.

1 was in the electoral district of Glengarry.

MANITOBA.

4 horses were killed on first test, valued at \$665.00, at a cost of \$443.33.

1 showed clinical symptoms.

162 horses were tested with mallein, of which 4 reacted and were destroyed. Of the 4 reactors 1 showed clinical symptoms of glanders at or during the test.

The 4 horses slaughtered were in the electoral district of Dauphin.

SASKATCHEWAN.

167 killed at first test.

24 " " second test.

191 (valued at \$27,805, at a cost of \$18,536.17).

43 showed clinical symptoms.

5,240 horses were tested with mallein, of which 191 reacted and were destroyed. Of the 191 reactors, 43 showed clinical symptoms of glanders at or during the test.

93 horses are under control for retest.
Of the 191 horses slaughtered—

13	were	in	the	electoral	district	of	Regina.
21	"	"	"	"	"	"	Humboldt.
108	"	"	"	"	"	"	Moosejaw.
1	was	"	"	"	"	"	Qu'Appelle.
37	were	"	"	"	"	"	Assiniboia.
5	"	"	"	"	"	"	Battleford.
1	was	"	"	"	"	"	Saskatoon.
5	were	"	"	"	"	"	Saltcoats.

—
191

ALBERTA.

1 killed on inspection.
20 " at first test.
1 " at fourth test.
—

22 (valued at \$2,875, at a cost of \$1,916.63).

6 horses showed clinical symptoms.
1,799 horses were tested with mallein, of which 21 reacted and were destroyed. Of
the 21 reactors, 5 showed clinical symptoms at or during the test.
Of the 22 horses slaughtered—

6	were	in	the	electoral	district	of	Medicine Hat.
4	"	"	"	"	"	"	Macleod.
7	"	"	"	"	"	"	Calgary.
4	"	"	"	"	"	"	Red Deer.
1	was	"	"	"	"	"	Strathcona.

—
22

BRITISH COLUMBIA.

1 killed at first test.
1 " " second test.
—

2 (valued at \$140, at a cost of \$93.33).

1 showed clinical symptoms.
14 horses were tested with mallein, of which two reacted and were destroyed. Of
the reactors, 1 showed clinical symptoms at or during the test.

RABIES.

In Ontario, 69 premises were quarantined on account of the prevalence of rabies
in the adjacent districts, distributed as follows:—

District.	Premises quarantined.
Brant.. . . .	3
York.. . . .	18
Dufferin.. . . .	15
Simcoe.. . . .	4
Welland.. . . .	3
Peel.. . . .	4
Wellington.. . . .	1
Halton.. . . .	2
Oxford.. . . .	1
Norfolk.. . . .	3
Perth.. . . .	15

SESSIONAL PAPER No. 15b

DOURINE.

A further reduction in the number of cases of this disease shows that gratifying progress has been made. The disease is of such an insidious nature that no effort is spared in the hope of its final eradication. Horse owners have co-operated with the Health of Animals Branch to a marked degree and have, very generally, submitted with a good grace to the restrictions of breeding and the movement of horses it was deemed necessary to impose. The laboratory at Lethbridge has again shown its great usefulness in affording facilities for the immense number of blood tests made by our pathologist there, Dr. W. L. Hawke, and his assistants.

	Horses destroyed.	Compensation.
		\$ cts.
1907.....	167	10,336 00
1908.....	49	3,449 00
1909.....	28	2,506 00
1910.....	37	3,419 00
1911.....	41	5,110 00
1912.....	18	1,739 00
*1913.....	18	2,096 00
1914.....	394	32,080 00
1915.....	382	31,363 00
1916.....	220	16,666 00

* Complement fixation test used for diagnosis.

DOURINE.

228 animals, valued at \$26,085, were slaughtered as being affected with this disease, at a cost of \$17,389.65, distributed as follows:—

SASKATCHEWAN.

Electoral District.	Animals quarantined.	Slaughtered.
Moosejaw.....	185	31
Saskatoon.....	1	.....
Assiniboia.....	2	.....
Battleford.....	21	1
	209	32

ALBERTA.

Calgary.....	85	12
Macleod.....	697	90
Medicine Hat.....	1,697	86
Red Deer.....	47	8
Strathcona.....	126	.....
Edmonton.....	1	.....
	2,653	196

ONTARIO.

	Animals quarantined.	Slaughtered.
Parry Sound... ..	1	—

CATTLE MANGE.

A further reduction of the mange area was effected during the year, nearly seventy townships being released. There has also been a diminution in the number of herds quarantined. The dipping of cattle under the supervision of our officers now meets with little or no opposition from owners, as they are realizing the advantages derived from ridding their cattle of other parasites as well as mange. Dipping is found to improve the general health and vigour.

Province.	Outbreaks	Animals affected.	Animals quarantined.
Saskatchewan... ..	23	75	15,651
Alberta... ..	57	759	23,937
British Columbia... ..	* 3	.....	25
Quebec... ..	1	2	2

* Canadian Pacific Railway Company Stock Yards, and Canadian Northern Pacific Railway Company Stock Yards at Kamloops are also quarantined, a license being required before any animals may be removed.

56,625 cattle were inspected on being presented for shipment from the quarantined area in Saskatchewan and Alberta.
136,787 cattle were inspected in Winnipeg on arrival from points west thereof.

HORSE MANGE.

Outbreaks have occurred in these provinces, and all were successfully treated under our officers' supervision.

Province.	Outbreaks.	Animals affected.	Animals quarantined.
Quebec... ..	26	39	55
Saskatchewan... ..	140	321	968
Alberta... ..	1	3	400
	167	363	1,423

24,552 horses and 41 mules were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

SESSIONAL PAPER No. 15b

SHEEP SCAB.

Two outbreaks, both in Manitoba, occurred during the year, and were successfully handled. The remainder of Canada was free from the disease.

In Manitoba 746 animals on 9 premises were found to be affected with sheep scab.

District.	No. affected.
Dauphin.	9
Brandon.	737
	<hr/> 746

In accordance with the Quarantine Regulations, 501 sheep imported into Canada were quarantined for the prescribed period of thirty days.

ANTHRAX.

A few outbreaks occurred in Ontario and Quebec. Vaccine prepared in our laboratory at Ottawa was successfully used in its control.

The following outbreaks were reported and dealt with during the year:—

Province.	Outbreaks.	Animals quarantined.	Animals affected.
Quebec.	3	136	6
Ontario. . .	10	229	19
	<hr/> 13	<hr/> 365	<hr/> 25

Eight hundred and ninety-nine doses of anthrax vaccine and 100,022 doses of blackleg vaccine were sent out during the year.

TUBERCULOSIS.

The application of the federal regulations to the city of Saskatoon began with the close of our last fiscal year, and I now report the result of the first year of operation. This has been highly satisfactory. The number of reactors found at the first test was less than might have been expected, and in the work of getting rid of them there was a gratifying absence of friction or dissatisfaction. In fact, no complaints have reached the branch from the dairymen concerned, that they considered their treatment unfair.

The citizens of Saskatoon have been well satisfied with the results attained, and the city council have expressed this feeling in the following resolution, passed July 13, after the completion of the first test:—

“That this city very much appreciates the prompt and effective response to their application to have all the cattle in the vicinity of Saskatoon tested for tuberculosis, and the excellent work carried out by the assistants of the Veterinary Director General's Department.”

As this report deals only with the work done previous to March 31, 1916, the following figures can only be taken to show what has already been accomplished towards a task, which is far from complete, and which it would be unreasonable to expect to finish in one year.

7 GEORGE V, A. 1917

RECORD OF TESTING AT SASKATOON.

2,232	cows tested at first test.. ..	136	reactors = 6	per cent.
561	" second test	27	" = 4.8	"
144	" third test	0	" = 0	"

The much smaller number shown at the second and third tests is due to the fact that the first test disclosed a large number of herds that contained no reactors. These herds were not retested during the period covered by the report. The herds in which reactors were found were retested as soon after the first test as it was deemed advisable, any reactors dealt with under the regulations, and a third test made after a reasonable interval.

DISPOSAL OF REACTORS.

The regulations provide for three methods of dealing with reactors: (1) immediate slaughter, (2) slaughter after fattening, and (3) withdrawal from the raw milk trade. Of the 163 reactors mentioned above, 144 were slaughtered either immediately or after fattening, 9 were still fattening for slaughter, and 10 were withdrawn from the dairy business by their owners, who preferred to have their licenses cancelled. These ten cows were earmarked by punching out a large "T" in the right ear to indicate to future purchasers that they are tuberculous cattle.

The small percentage of cattle thus withheld from slaughter is, I think, fair evidence that the majority of dairymen do not want to keep tuberculous cows, and will get rid of them if reasonable assistance is granted.

142 reactors slaughtered, valued \$9,440, compensation \$3,144.59.

2 reactors slaughtered, salvage in excess of value.

1 reactor traded for horse.

9 reactors, where owners preferred to have licenses cancelled than slaughter animals. These could not be classed under section (a), paragraph 5, of the Tuberculosis Order and were therefore earmarked and released.

9 reactors not yet slaughtered.

163 reactors.

NEW METHODS OF TUBERCULIN TESTING.

The advocates of intradermal and subpalpebral testing have been claiming for these methods equal reliability with the old subcutaneous test, and the great advantage of taking less time. The accuracy of a test is usually affirmed when it is found on postmortem examination that the animal which reacted to the test was actually diseased. As the non-reactors are not usually killed at the time of the test, there is no evidence to show that they were free from disease. In order to determine accurately both aspects of the question the following experiment was carried out:—

One thousand and six cows, which were about to be slaughtered at an abattoir, were first submitted to the test. This was applied by two of our most experienced inspectors, Drs. Moore and Stork. The tuberculin used was of two kinds; the first was prepared in our own laboratory at Ottawa and used in the testing of 908 cattle; the second kind of tuberculin was obtained from a well-known firm of biological chemists in the United States, and was specially made for intradermal testing. Ninety-eight of the cattle were tested with this tuberculin. No difference in the results was observed in the use of these different tuberculins.

In order to test the relative advantages or disadvantages of the intradermal and subpalpebral methods, 656 were tested by the former, and 350 by the latter. The intradermal method usually adopted involves the injection of the tuberculin ($\frac{1}{4}$ c.c.) into the skin at the root of the tail, where the skin forms a fold known as the caudal

fold. The injection is made into the inner layer of the skin and not into the tissue beneath the skin, the operation requiring more skill and care than the subcutaneous injection.

Comparing the results obtained by the two methods, no difference as to accuracy could be detected, and the inspectors making the test were indifferent as to which method they used.

Total number of cattle tested.. . . .	1,006
" " slaughtered.. . . .	1,006
" " reacting.. . . .	45
Number of reactors found diseased on postmortem.. . . .	16
" " " " "	77
" suspects " " "	8

It will be noted from the above that the result was far from satisfactory. Not only did the test fail to pick out the diseased animals, but it indicated disease in animals where it could not be found. The large number of suspects shows that there is much difficulty in reading aright the evidence of swelling. There is sometimes a slight swelling which the inspector is at a loss to explain. It may be a slight reaction, or perhaps a slight local infection or irritation from something carried in by the needle from the surface of the skin. The inspector is unable to decide, and classes the animal as suspicious.

On the whole, the result is not satisfactory to the new tests, and I do not think we would be justified in adopting either, in preference to the present method. This has its drawbacks, but, in good hands and used on cattle that have not been tampered with, it is quite reliable.

Tuberculin Tests Made

Eight hundred and six cattle were tested for export, 5 of which reacted, 3 were classed as suspicious, and 706 proved healthy.

7 GEORGE V, A. 1917

Five thousand three hundred and seventy-one cattle were tested by private practitioners, 366 of which reacted, 98 were classed as suspicious, and 4,907 proved healthy.

All reactors were permanently earmarked by a veterinary inspector, in cases where the owner did not voluntarily destroy them.

Two hundred and fifty-eight cattle were tested for shipment to different parts of the Dominion, 10 of which reacted, and 248 proved healthy.

One thousand nine hundred and seventy-five cattle were tested in herds under the supervision of this department, 119 of which reacted, 18 were classed as suspicious, and 1,838 proved healthy.

Eight hundred and fifty-five other cattle were tested by officials of this department, 58 of which reacted, 37 were classed as suspicious, and 760 proved healthy.

HOG CHOLERA.

The experience of past years having proved conclusively that the feeding of uncooked garbage is a frequent cause of hog cholera, and has been responsible for many serious outbreaks of the disease, it was decided to limit this practice to those who are willing to cook the garbage and to maintain their hog pens in a sanitary condition.

The following regulation was passed and is now law:—

“The feeding of swine upon garbage, either raw or cooked, obtained elsewhere than on the premises where fed, is prohibited, unless special permission in writing is first obtained from the Veterinary Director General.”

Following the passing of this regulation, our inspectors have endeavoured to have all persons engaged in the business of garbage feeding apply for a license to continue the same. No charge is made for a license, but licenses are issued only to persons having the necessary appliances for cooking the garbage, and who maintain their premises in a sanitary manner.

A large number of licenses have been issued, and the supervision which this system enables us to exercise over this business is already showing good results. No prosecutions have yet been undertaken of parties who continue to feed garbage without a license, but it will probably be necessary to do so unless the law is generally obeyed.

Another important change in our method of handling hog cholera has resulted in reducing the losses from the disease to a considerable extent. This is the use of serum to save as many as possible of the hogs in an outbreak. We are using the “serum alone” method to immunize hogs which have been exposed to infection but have not yet developed the symptoms of the disease. Under former methods, these hogs were slaughtered and their carcasses destroyed, so as to stamp out the infection as soon as possible. Now we are able to save a large number of hogs which are fattened under quarantine, and subsequently slaughtered under inspection for pork. We are not permitting these immunized hogs to remain alive for breeding purposes, as it is likely that some of them may be immune carriers of the disease, and thus originate fresh outbreaks.

The serum is injected by our own inspectors without cost to the farmer, and the serum is obtained from highly recommended manufacturers in the United States. For many reasons this appears to be more desirable at present than to engage in its manufacture at our laboratory here.

SESSIONAL PAPER No. 15b

ESTIMATED saving to the department through the use of hog cholera serum from April 26, 1915, to December 31, 1916.

Hogs treated with serum, 1915-16..	2,349
" " April 1, 1916, to December 31, 1916..	6,036
Total hogs treated..	8,385
Estimated compensation value..	\$57,145 66
Cost of 346,699 c.c. serum at \$15 per 1,000..	1,451 28
Estimated cost of express..	72 00
" " broken syringes and needles..	49 00
" " ear tags..	75 00
Total expense..	\$ 1,691 28
Estimated saving..	\$55,454 38

I am glad to report that a very great improvement is shown in the figures for the year now ending. Last year was very expensive to us in the heavy losses occasioned by this disease, and the drop from 34,470 hogs destroyed in 1915 to only 5,700 in 1916 is extremely gratifying.

	No. of hogs destroyed.	Compensation.
1909..	1,881	\$ 9,912
1910..	1,127	7,087
1911..	1,346	8,818
1912..	4,249	23,446
1913..	8,466	52,785
1914..	34,779	196,381
1915..	34,470	188,562
1916..	5,700	33,695

Dominion.—In the Dominion, 5,700 hogs were destroyed as diseased, at a cost of \$33,699.95 in compensation.

Nova Scotia.—Three outbreaks of hog cholera occurred in Nova Scotia, in which 399 hogs, valued at \$3,063 were destroyed, at a cost of \$2,041.98 in compensation. Three premises were quarantined on suspicion of hog cholera.

Quebec.—Thirty-one outbreaks of hog cholera occurred, in which 706 hogs, valued at \$6,125, were destroyed in the undermentioned districts, at a cost of \$4,083.28.

One hundred and thirty premises were also quarantined on suspicion, involving the control of 1,655 hogs.

Six hogs, valued at \$70, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.
Chambly-Verchères..	1	1
Laval..	6	430
Montmorency..	1	105
Muskegon..	1	7
Bagot..	3	22
Compton..	1	8
Chaudière..	8	11
L'Assomption..	1	27
Rimouski..	1	1
Bellevue..	1	1
Labrador..	1	1
Quebec..	1	1
	41	606

Ontario.—One hundred and sixty-three outbreaks of hog cholera occurred, in which 2,537 hogs, valued at \$21,668.50, were destroyed in the undermentioned districts, at a cost of \$14,445.07 in compensation.

Two hundred and two premises were also quarantined on suspicion, involving the control of 4,758 hogs.

7 GEORGE V, A. 1917

Twenty-two hogs, valued at \$141.82, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.
Essex, S.R..	23	684
Essex, W.R..	2	21
Kent, E.R..	3	50
Kent, W.R..	10	227
York, S.R..	13	235
York, C.R..	9	80
Elgin, E.R..	11	218
Elgin, W.R.:.	9	123
Nipissing.. . . .	23	286
Oxford, S.R..	1	5
Wentworth.. . . .	3	38
Frontenac.. . . .	3	36
Middlesex, E.R..	6	118
Carleton.. . . .	9	53
Welland.. . . .	16	121
Waterloo, N.R..	2	69
Peel.. . . .	2	27
Brantford.. . . .	7	95
Brant.. . . .	4	35
Lincoln.. . . .	1	1
Haldimand..	3	4
London.. . . .	3	11
	163	2,537

Manitoba.—Thirty-nine outbreaks of hog cholera occurred in Manitoba, in which 922 hogs, valued at \$8,981, were destroyed in the undermentioned districts, at a cost of \$5,987.28.

Thirteen premises were also quarantined on suspicion, involving the control of 177 hogs.

Ten hogs, valued at \$41, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.
Winnipeg.. . . .	6	343
Brandon.. . . .	28	395
Dauphin.. . . .	2	14
Provencher.. . . .	2	170
	39	922

Saskatchewan.—Twenty-two outbreaks of hog cholera occurred in Saskatchewan, in which 479 hogs, valued at \$4,415.40, were destroyed in the undermentioned districts, at a cost of \$2,943.58 in compensation.

Nineteen premises were also quarantined on suspicion, involving the control of 661 hogs.

Twenty-one hogs, valued at \$87.33, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.
Assiniboia.. . . .	3	219
Saskatoon.. . . .	12	174
Battleford.. . . .	5	33
Moosejaw.. . . .	2	53
	22	479

Alberta.—Seven outbreaks of hog cholera occurred in Alberta, in which 288 hogs, valued at \$3,526, were destroyed in the undermentioned districts, at a cost of \$2,350.64 in compensation.

Seventeen premises were also quarantined on suspicion, involving the control of 1,247 hogs.

Nine hogs, valued at \$74, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed
Macleod..	1	4
Edmonton..	3	125
Strathcona..	2	139
Medicine Hat..	1	20
	<hr/>	<hr/>
	7	288

Fifteen premises were also quarantined on suspicion, involving the control of 335 hogs.

Seven hogs, valued at \$30.66, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.
Vancouver..	1	35
New Westminster..	3	71
Victoria..	2	19
Yale-Cariboo..	1	7
Nanaimo..	16	226
Comox-Atlin..	2	11
	<hr/>	<hr/>
	25	369

Our laboratories have continued to do good work in the manufacture of biological products for use in the diagnosis and control of disease, and have also been able to attack some of the problems in veterinary science, which call for research. In this latter respect, however, our efforts have been limited on account of the absence "with the colours" of Dr. Watson, of our Lethbridge laboratory, and Dr. Evans, of headquarters' staff.

At the Ottawa Biological Laboratory, under the charge of Dr. C. H. Higgins, a large quantity of biological products were manufactured for use in our service and for sale to the public.

	No. of doses
Mallein..	19,000
Tuberculin..	22,980
" precipitated..	1,600
Strangles vaccine..	3,050
Stock bacterial vaccine..	14,300
Blackleg vaccine, single..	120,910
" " double..	240
Anthrax vaccine..	100
Total..	181,880

Our blackleg vaccine is now prepared in the form of pellets to be introduced beneath the skin by a special instrument. This change was made because of the frequent breakages of instruments in using the thread form of vaccine, and also on account of the increasing price of the silk cord used in its manufacture. Our sales of blackleg vaccine are increasing, and in its new form the vaccine appears quite satisfactory.

The importance of reliable disinfectants for the work of this branch, cannot be overestimated. In the suppression of disease, the cleansing and disinfecting of premises, on which cases of contagious disease have occurred, is a vital matter, and the agent used must be of sufficient strength to destroy germ life, or the work is of no avail.

The enormous increase in the price of cathodic gold, owing to its use in exploding, has resulted in the use of a great many substitutes, some of very doubtful value, and

7 GEORGE V, A. 1917

I therefore decided that it would be well to test as many of these substitutes as we conveniently could. This work has occupied much of the time of Dr. Higgins, and has already given us good results. When the investigation is completed, it may be advisable to publish the results in bulletin form.

In examining and testing disinfectants, the method of the Hygienic Laboratory of the Public Health Service of the United States is employed, pure carbolic acid (phenol) being used as the standard of comparison.

Detailed information concerning the examinations made of a number of disinfectants is presented herewith. These are placed in alphabetical order for ready reference. We are not presenting full information concerning results secured with organic matter present, for in some instances these are still incomplete. Our experience indicates, however, that the drop in coefficient value when organic matter is added varies from one-twentieth to one-third, according to the chemical constituents included in the bulk disinfecting material. The pressure of work has been so great that we have been unable to complete this feature in every instance. However, we have sufficiently checked this aspect of the disinfectant problem to fully safeguard routine disinfecting operations.

CHLORIDE OF LIME.

		Phenol coefficient.
7739	Sample taken from Laboratory stock (Crown Diamond)	11.8
7740	Sample taken from Laboratory stock (Crescent).. .. .	13.3

COOPER'S FLUID.

7230	Sample submitted by the Veterinary Director General.. /.. ..	1.53
7290	Sample submitted by the Veterinary Director General.. .. .	1.90
7726	Sample submitted by E. S. Archibald, Ottawa.. .. .	2.1
7763	Sample submitted by the County of Carleton General Protestant Hospital, Ottawa (barrel bulk).. .. .	2.7

CRESOL COMPOUND.

7316	Sample submitted by Inspector W. W. Stork, Toronto, Ont. ..	1.8
7408	Sample submitted by the Can. Northern Ry., Winnipeg, Man..	0.2
7449	Sample submitted from Turcot Yards.. .. .	1.6
	(Labelled Cresol compound but was really a Carbolic oil.)	
7461	Sample submitted by Inspector W. W. Stork, Toronto, Ont. ..	0.12
7560	Sample submitted by the Can. Northern Ry., Winnipeg, Man..	1.4
7689	Sample submitted by W. E. Troup, Niagara Falls, Ont.. .. .	1.0
7693	Sample submitted by the Can. Northern Ry., Winnipeg, Man..	2.65
7708	Sample submitted by the Grand Trunk Ry. stores, Ottawa. ..	2.5
7721	Sample (Cre-septic) submitted by the Theo. B. Robertson Soap Co., Chicago, Ill., U.S.A.. .. .	1.9
7722	Sample submitted by the Grand Trunk Ry., Montreal, Que. ..	2.8
7729	Sample submitted by W. E. Troup, Niagara Falls, Ont. .. .	0.58
	(After settling an examination of the top layer gave a coefficient of 0.37, while the bottom gave a coefficient of 0.79.) .	
7760	Sample submitted by Inspector Shaver, Edmonton, Alta.. ..	0.8
7780	Sample submitted by the Ottawa and New York Ry., Ottawa..	2.1
7785	Sample submitted by the Grand Trunk Ry., Niagara Falls, Ont.. .. .	2.98

CRUDE CARBOLIC ACID.

Chem. Lab. No.	Sample from Laboratory stock secured in 1912.. .. .	3.02
19970	0.94
19971	0.74
19972	1.56
19973	0.51
19974	1.5
20001	1.8
20005	0.64
20013	0.53
20015	1.51
20016	0.6
20017	0.8
20018	0.86
20046	0.64
20060	0.64
20061	0.49
20062	2.0

Chem. Lab. No.		Phenol coefficient.
20069	0.41
20326	0.34
20715	5.56
	(An emulsified product.)	
7271	0.8
7272	0.59
7317	Sample submitted by Inspector W. W. Stork, Toronto, Ont. ..	1.0
7360	Sample submitted by the Grand Trunk Ry., Montreal, Que. ..	2.5
7371	Sample submitted by the Central Vermont Ry., St. Albans, Vt. ..	1.0
7372	Sample submitted by the Canadian Pacific Ry., Montreal, Que. ..	2.63
7461	Sample submitted by Inspector W. W. Stork, Toronto, Ont. ..	0.12
	[Preparation called Cresol but is a crude black oily preparation (carbolic oil).]	
7683	Sample submitted by Inspector W. W. Stork, Toronto, Ont. ..	0.38
7684	Sample submitted by Inspector W. W. Stork, Toronto, Ont. ..	0.4
	COOKS COFECTANT.	
	Sample received in 1910. Tested in 1915.. ..	10.0
	ORFOLIN.	
	Laboratory stock secured in 1913. Tested March 5, 1915	4.39
7417	Sample submitted by Inspector Philips, Bridgeburg, Ont. ..	4.6
7436	Sample submitted by Inspector C. D. McGilvray, Winnipeg, Man.	2.2
	FORMALDEHYDE.	
7441	Sample submitted by F. K. Dutcher, Druggist, St. Albans, Vt., U.S.A.	0.2
	HYCOL.	
	Laboratory stock.. ..	4.31
	IZAL.	
	I Laboratory stock (Sample tin)	6.10
	II " "	8.48
	III " "	6.24
7551	Sample submitted by the Veterinary Director General. (Sample tin)	8.6
7715	Sample submitted by Inspector C. D. McGilvray, Winnipeg, Man.	7.5
7764	Sample submitted by the County of Carleton General Protestant Hospital, Ottawa, (from bulk supply)	4.18
	IZAL, VETERINARY.	
	Laboratory stock (Sample tin)	2.62
	K.A.G.	
	(Kills all germs). A powder disinfectant selling locally at 10 cents per packet (packets first recommended for use for disinfecting and keeping flies away from garbage pails).	
	C.H.H. Bought at A. E. Rea & Co.	1.4
	(Watery extract made for testing but expression of coefficient refers to original powder and not to solution)	
	K.K. DISINFECTING FLUID.	
	(Manufactured by the Hightower Chemical Co., Rochester, N.Y.)	
7623	Sample I submitted by E. S. Archibald, Ottawa,	0.8
7682	Sample II submitted by E. S. Archibald, Ottawa,	2.6
7420	Sample III submitted by E. S. Archibald, Ottawa,	2.8
	LIME.	
•7614	(Hydrated) Local supply	17.4
•7737	(Hydrated) Sample submitted by Inspector W. W. Stork, Chatham, Ont.	13.0
7749	(Stone) Sample submitted by Inspector W. W. Stork, Toronto, Ont.	3.2
7757	(Stone) Sample submitted by Inspector C. D. McGilvray, Winnipeg, Man.	7.8
7761	(Stone) Sample submitted by Inspector C. D. McGilvray, Winnipeg, Man.	0.4

156. 22

7 GEORGE V, A. 1917

NEKO.

Phenol coefficient.

(Manufactured by Parke, Davis & Co., Detroit, Mich.)		
7784	Sample submitted in original container by the Veterinary Director General (Sample No. C. 456879)	15.2
7791	Sample submitted in original container by the Veterinary Director General (Sample No. 434610)	16.9

PHENECO.

(Manufactured by the West Disinfecting Co., Montreal.)		
7612	Sample submitted by the Veterinary Director General	15.8

PYXOL.

(Manufactured by the Paterson Manufacturing Co., Montreal.)		
7401	Sample submitted by the Canadian Pacific Railway, Montreal.	13.0
7697	Sample submitted by Inspector Frink, St. John, N.B.	11.8
7700	Sample submitted by the Canadian Pacific Railway, Montreal.	10.6
7750	Sample submitted by Inspector Stork, Toronto, Ont.	12.1

SAND DISINFECTANT.

7183	Sample submitted by the Veterinary Director General (25 grammes taken and after leaching with water, 24.5 grammes of insoluble material remains.)	0.033
------	--	-------

SODIUM HYPOCHLORITE.

7787	Sample secured from City Water Works (courtesy of Mr. J. Race, city bacteriologist)	5.0
------	---	-----

WESCOL.

7719	Sample submitted by E. S. Archibald, Ottawa (This sample was found later to have been supplied in error by the Warehouse and replaced with the product ordered.)	4.3
------	---	-----

ZENOLEUM.

7624	Sample submitted by E. S. Archibald, Ottawa	2.3
------	---	-----

It will be seen from the above that the disinfectants which we have tested vary greatly in their coefficient values. While we express the disinfectant value by a given number, this should be interpreted to mean that the number or coefficient is the relative lethal effect of that particular disinfectant compared with pure carbolic acid or phenol on the typhoid organism. Therefore, if we express the phenol coefficient as 2.0 this would mean, that if you are accustomed to using your phenol or carbolic acid in a 5 per cent solution, you would secure under ordinary conditions equivalent results with a 2½ per cent solution of this stronger product. For the purpose of arriving at the dilution in which the disinfectant should be used we are arbitrarily specifying the following: "A disinfectant should be made using therefor 40 pounds of freshly-burned stone lime to the barrel of water as a base, and to this add sufficient disinfectant having a phenol coefficient of not less than 2.0 to make a 3 per cent solution of the disinfectant in the limewash preparation. Where the phenol coefficient is shown to be in excess of 2.0, the amount of disinfectant to be added may be reduced proportionately. Thus if a disinfectant having a phenol coefficient of 10.0 is used, a limewash solution containing 0.6 per cent of the disinfectant will be the equivalent.

ABORTION.

Another very important subject with which we have dealt during the past year has been that of contagious abortion. The details of this work have been entirely in the hands of Dr. J. C. Reid of the Laboratory staff. He has undertaken a great many examinations to determine the presence or absence of this affection in herds where a suspicious case has appeared. He has also had a number of animals placed at his disposal through the courtesy of the Dominion Experimental Farms, with the result that these are now under experiment to determine whether or not the method of immunization will prove effective. To assist this work and overcome the very serious reaction at times following the injection, he has devised a serum which promises good results. This

SESSIONAL PAPER No. 15b

serum has been secured from the goat by increasing the protective power in the blood against the organisms causing contagious abortion. After a sufficient resistance has been built up in the animal under experiment, the blood is withdrawn, the serum permitted to rise, and this is afterwards tested for the purpose of standardizing. The results already secured show that the simultaneous injection of a living or killed culture and the serum is followed by a very slight or no reaction. When the living or killed culture without the serum is used there is quite an elevation in temperature, and other symptoms may also be noted. Work is continuing on this line as fast as our limited staff permits.

Agassiz, B.C.—Our small research laboratory, under the care of Dr. Seymour Hadwen, continues to give good results. His investigation of the life-history of the parasites of cattle, commonly known as "warbles," has brought out new and interesting facts. These were deemed of sufficient importance to be published as bulletins of the Scientific Series, Nos. 21 and 22, entitled, respectively, "A further contribution on the Biology of *Hypoderma Lineatum*," and "Observations on the Migration of Warble larvæ through the tissues."

A serious malady of horses, prevalent on the low coast lands, and resulting in many deaths, was investigated and found to be caused, in all probability, by feeding on bracken or fern. This weed is very frequently found in the hay put up in this region, and when in sufficient quantity gives rise to symptoms commonly known as "staggers." The horse becomes weak, loses control of his legs, wobbles in his gait, becomes emaciated, and dies. Experiments are being made to verify the facts by feeding hay containing bracken to horses under observation, the results of which will be reported later.

During the summer of 1915, an experiment was carried out with a view to ascertaining facts regarding a disease of cattle in the Dry Belt of British Columbia. This disease has been causing numerous deaths among the cattle in the vicinity of Kamloops. Stock owners were inclined to believe that the disease is contagious, and as it does not correspond with any of the known contagious diseases, it was of importance to ascertain the facts regarding it. With this object, ten head of healthy young cattle were shipped from Alberta to Kamloops and placed in a corral with five head of diseased cattle. They were allowed to mingle freely together for three months, receiving the same feed, water, and care. During all this time, the herd was under the constant supervision of a veterinary inspector, who made daily observations of their temperature, etc. The ten head of healthy cattle remained healthy, showing that the disease is not transferable under the conditions ordinarily found.

Experiments in inoculation of healthy animals with blood and discharges from the diseased ones also proved negative. The pathology of the disease remains to be cleared up, and further research is to be made; but it is satisfactory to know that whatever its nature and cause, the disease is not contagious.

The investigation of bovine hematuria "red water" is continuing, and satisfactory progress made. We hope to have material for publication on this subject before long. Excellent work has also been done at this laboratory in the identification of the internal parasites found in animals in British Columbia.

Lethbridge.—The laboratory near this city has been under the supervision of Dr. W. L. Hawke since June 26, 1915, when Dr. A. Watson left on military leave. During this period the work of the laboratory has consisted almost exclusively in making complement fixation tests for the diagnosis of dourine. The total number of tests, including controls, reaches the large total of 16,118, entailing an immense amount of careful, highly technical work. This has been performed in a highly satisfactory way by Dr. Hawke and his assistants.

IMPORT INSPECTIONS FROM UNITED STATES AND NEWFOUNDLAND.

	Horses.	Mules.	Cattle.	Sheep.	Swine.	Goats.	Shet- land Ponies.	Asses.	Burros.	Deer.
Charlottetown, P. E. I.	4									
Sydney, N. S.	53					1				
St. John, N. B.	35			15						
St. Stephen.	26		1							
McAdam Junction.	13		5							
Deer Junction.	15									
Woodstock.	10									
Florenceville.	4									
Arrestook Junction.	24									
Grand Falls.	8									
St. Leonards.	25									
Edmundston.	31									
N. B. General.	4									
Comins Mills, Que.	3									
Beauceville.	300									
Canticook.	10		1							
Beebe Junction.	104		1							
Sherbrooke.	28		1							
Highwater.	20									
Lacolle Junction.	539									
Arthelstan.	1,556		3							
Dundee.	37		5							
St. Agnes de Dundee.	5									
Cornwall, Ont.	5									
Prescott.	34		1							
Morrisburg.	9	1	21							
Brockville.	24									
Kingston.	23									
Toronto.	8									
Niagara Falls.	59	2	17							
Bridgeburg.	1,298	9	2	1						
Windsor.	79,077	5	29	1	6					5
Sarnia.	1,061		9		4					
Sault Ste. Marie.	9									3
Port Arthur.	3									
Rainy River.	12	2	1							
Fort Frances.	55	4	7				2			
Emerson, Man.	1,064	155	160			3				
Gretna.	163	13	59	4,625						
Snowflake.	58		24							
Bannerman.	33		27							
North Portal, Sask.	1,542	129	254	2		6		5		
Northgate.	40		9			1				
Wood Mountain.	285		9	9,712						
Big Muddy.	440		14							
Willow Creek.	247	2		3,811						
Sask. General.	4									
Pinhorn, Alberta.	8									
Combs.	532	36	132	20,418						
Twin Lakes.	83		181							
Gateway, B. C.	21		6							
Kingsgate.	555	29	57	9,595						
Rossland.	10		13							
Grand Forks.	15		99							
Midway.	5		4							
Mynaster.	3		1							
Bridgville.	2		3							
Keremeos.	13									
Osoyoos.	22	4	1	494						
Huntingdon.	86	1	104	11,377	14					
New Westminster.	2		16							
White Rock.	18		70	4,980		4				
Vancouver.	30	25		11,847				2	10	
Victoria.	2		29	1,198						
Total.	89,820	417	1,384	78,109	24	15	1	7	10	9

SESSIONAL PAPER No. 15b

IMPORT INSPECTIONS FROM EUROPE AND ELSEWHERE.

Port.	Horses.	Cattle.	Swine.	Sheep.
Halifax, N.S.....	2			
St. John, N.B.....	17			
Montreal, Que.....	38			
Quebec.....		144	2	70
Niagara Falls, Ont.....	10			
Total	67	144	2	70

PURE-BRED IMPORTS.

HORSES.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Shire.....	6	1		7
Clyde.....	39	4		43
Thoroughbred... ..	8	14		22
Hackney.....	2	4		6
Pony.....	1	2		3
Standardbred.....	2	107		109
Percheron.....		53		53
Shetland.....		4		4
Total.....	58	189		247

CATTLE.

Breed.	Great Britain	United States.	Elsewhere.	Total.
Shorthorn.....	39	10		49
Guernsey.....	51			51
Ayrshire	29	4		33
Jersey.....	20	13		33
Red Polled.	5			5
Holstein		12		12
Hereford		31		31
Galloway.....		2		2
Total	144	62		206

SWINE.

Breed.	Great Britain	United States	Elsewhere.	Total.
Yorkshire.....	2			2
Duroc Jersey		6		6
Ohio Improved Chester.....		4		4
Total	2	10		12

7 GEORGE V, A. 1917

SHEEP.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Cheviot.....	70	.....	.....	70
Karakule .....	.....	15	.....	15
Romney.....	.....	7	.....	7
	70	22	.....	92

DISEASED IMPORTS.

Port.	No. horses in infected shipments.	No. of shipments.	No. horses diseased.	Country of origin.	Action taken.
Fort Frances, Ont.	2	1	1	United States.	Returned.
North Portal, Sask	46	7	7	"	"
Big Muddy, "	2	1	1	"	"
Coutts, Alberta.....	3	1	1	"	1 slaughtered, 2 held for retest.
Midway, B. C.....	1	1	1	"	Returned.
	54	11	11		

Thirteen cattle tested at Huntingdon were returned to the United States and one reactor earmarked.

ANIMALS INSPECTED FOR EXPORT.

Port.	Horses.	Cattle.	Sheep.	Swine.	Goats.	Calves.
Charlottetown to Newfoundland.....	27	692	548	156	.....	.....
" " United States.....	1	.....	.....	2	.....	.....
Summerside to Newfoundland.....	.....	135	343	.....	.....	.....
" " United States.....	.....	.....	.....	3	.....	.....
Halifax to St. Pierre and Miquelon.....	.....	21	11	20	.....	.....
" " Demarara .....	.....	.....	20	.....	.....	.....
" " Trinidad .....	.....	.....	3	11	.....	.....
" " Great Britain	1,362	.....	.....	.....	.....	.....
" " Newfoundland.....	5	2	.....	3	.....	.....
" " Bermuda.....	18	13	2	10	.....	.....
" " Charlottetown .....	.....	.....	67	.....	2	.....
" " United States.....	1	.....	.....	.....	.....	.....
Sydney to Newfoundland.....	145	542	251	141	.....	.....
" " St. Pierre and Miquelon.....	.....	31	59	3	.....	.....
St. John to (destination unknown)	6,045	.....	.....	.....	.....	.....
Montreal to France .....	.....	12,438	.....	.....	.....	.....
" " South Africa.....	.....	1	145	.....	.....	.....
" " Great Britain.. ..	7,949	.....	.....	.....	.....	.....
Toronto to United States.....	9	25,376	3,896	.....	.....	4,036
" " Bermuda....	.....	292	1184 lambs	.....	.....	.....
	15,562	39,543	5,345 1184 lambs	349	2	4,039

SESSIONAL PAPER No. 15b

IMPORT TESTING.

Three thousand four hundred and thirty-four horses were tested on arrival from the United States and allowed to proceed to their destinations.

Entered at—	Number.	Entered at—	Number.
Halifax, N.S..	3	Sault Ste. Marie.. . . .	3
St. John, N.B..	2	Port Arthur.. . . .	2
St. Stephen.. . . .	5	Rainy River.. . . .	9
McAdam Junction.. . . .	6	Fort Frances.. . . .	46
Woodstock.. . . .	3	Ontario General.. . . .	2
Florenceville.. . . .	3	Emerson, Man.. . . .	214
Aroostook Junction.. . . .	24	Gretna.. . . .	56
Grand Falls.. . . .	8	Snowflake.. . . .	56
St. Leonards.. . . .	25	Bannerman.. . . .	28
Edmundston.. . . .	24	North Portal, Sask.. . . .	275
Quebec, Que.. . . .	2	Northgate.. . . .	16
Comins Mills, Que.. . . .	3	Wood Mountain.. . . .	219
Lake Megantic.. . . .	4	Big Muddy.. . . .	50
Beauceville.. . . .	295	Willow Creek.. . . .	109
Coaticook.. . . .	15	Saskatchewan General.. . . .	8
Beebe Junction.. . . .	60	Pinhorn, Alta.. . . .	2
Sherbrooke.. . . .	13	Coutts.. . . .	323
Highwater.. . . .	3	Twin Lakes.. . . .	81
Abercorn.. . . .	14	Alberta General.. . . .	3
St. Armand.. . . .	9	Gateway, B.C.. . . .	21
Lacolle Junction.. . . .	238	Kingsgate.. . . .	58
Noyan Junction.. . . .	7	Rossland.. . . .	4
St. Johns.. . . .	496	Grand Forks.. . . .	9
Athelstan.. . . .	5	Midway.. . . .	6
Dundee.. . . .	4	Myncaster.. . . .	3
St. Agnes de Dundee, Que.. . . .	2	Bridenville.. . . .	2
Quebec General.. . . .	6	Keremeos.. . . .	13
Prescott, Ont.. . . .	7	Osoyoos.. . . .	23
Morrisburg.. . . .	8	Huntingdon.. . . .	23
Cornwall.. . . .	18	White Rock.. . . .	7
Brockville.. . . .	13	Vancouver.. . . .	10
Kingston.. . . .	8	Victoria.. . . .	2
Toronto.. . . .	7	Prince Rupert.. . . .	6
Niagara Falls.. . . .	13	White Horse, Y.T.	2
Bridgeburg.. . . .	48		
Windsor, Ont.. . . .	333		
Sarnia.. . . .	10		
			<u>3,404</u>

STAFF CHANGES.

Appointments, resignations, etc., March 31, 1915, to March 31, 1916:—

APPOINTMENTS.

Veterinary Inspectors.—W. T. Patton, V.S.; T. H. Jagger, V.S.; A. M. Lloyd, V.S.; W. Jakeman, V.S.; J. H. Brown, V.S.

Inspectors.—W. J. Wheelhouse; R. Anderson, V.S.; G. L. Terry; G. E. M. Scott; J. J. Kelly.

RESIGNATIONS.

Veterinary Inspectors.—P. A. Gough, V.S.; J. Simpson, V.S.; W. T. Patton, V.S.; H. L. Bissonnette, V.S.; J. H. Brown, V.S.

TRANSFERS.

Veterinary Inspectors (from Meat Inspection).—D. E. Tulloch, M.R.C.V.S.; W. Moynihan, V.S.; H. R. Estes, V.S.; C. A. Mitchell, V.S.

DEATHS.

Veterinary Inspector F. C. Brown.

Veterinary Inspector B. A. Sugden.

Owing to the improvement in the situation in the United States with regard to Foot and Mouth Disease it was possible to dispense with the services of the following temporary inspectors during the year March 31, 1915, to March 31, 1916: J. Gillespie, H. Acton, J. Robinson, A. A. Joslin, G. Moore, E. Branigan, John Morris, W. A. Horne, W. J. Wheelhouse.

ON ACTIVE SERVICE.

4th August, 1914-31st March, 1916.

Inside Service.—Major C. H. L. Sharman, Captain T. C. Evans, B. V. Sc., Lieutenant R. H. L. Uglow, Lieutenant E. D. Perney, Lance-Corporal F. Dexter.

Outside Service.—Major E. C. Thurston, D.V.S., Captain A. Watson, V.S., Captain D. S. Tamblyn, D.V.S., Captain B. R. Poole, V.S., Captain C. Maconachie, V.S., Lieutenant W. F. Macdougall, V.S., Lieutenant F. J. Braund, V.S., Private G. H. Unwin, Private H. C. Evans, Private S. Metze, Private G. A. Cousins, Lieutenant A. E. Cameron, V.S. (resigned to go), G. S. Thornewill, V.S. (resigned to go), J. T. M. Hughes, M.R.C.V.S. (resigned to go), R. W. MacDonald, V.S. (resigned to go), J. J. Farrell, V.S. (resigned to go), J. Simpson, V.S. (resigned to go), J. H. Brown, V.S. (resigned to go).

MEAT AND CANNED FOODS DIVISION.

The work of this division has continued to increase. The demands of the war have greatly stimulated the packing industry, and in consequence the duties of our staff have been correspondingly increased. Under the constant and capable supervision of Dr. R. Barnes, Chief Meat Inspector, the service has been satisfactory, the inspection careful and efficient, and performed with the minimum of friction between the packers and the staff. We may justly claim our meat inspection to be as good as any we know of, and our stamp "Canada Approved" the guarantee of good, sound, wholesome meat.

Owing to the enormous demand of the British market, packers were unable during the past year to procure sufficient hogs in Canada to keep up the supply for this trade; in consequence of which they were forced to import into inspected establishments, 380,726 carcasses, of which 223,706 were in the form of singed hogs and 157,020 scalded hogs, together with 20,000,000 pounds of hams, etc.

This immense import of meats from the United States, nearly all of which entered inspected establishments, was, in accordance with the United States laws governing exports and our Meat and Canned Foods Act regarding the entry of meats into inspected plants, inspected and passed in the country of origin, and its shipment from the United States was supervised by their officers. Such meats were subjected to a close supervision by our inspectors upon their entry into Canadian plants, where all that was intended for export to Great Britain was separately handled, cured, and boxed. It was then shipped under special brands in order that, while it had been handled by Canadian firms and given a Canadian cure, it should not be shipped or sold as Canadian bacon, which at the present time has a splendid reputation in Great Britain, and brings a price second only to the best Danish or Irish cures.

SESSIONAL PAPER No. 15b

Owing to the number of officers who were granted military leave and who resigned for overseas service, we were extremely short handed during the whole year, although we held two examinations, one in April at points throughout Canada, at which sixty veterinarians wrote, of whom thirty-three were successful, and a special examination at Laval University on May 18, at the close of the college year, in order that their graduating class might qualify for appointment. At the latter ten candidates wrote and five were successful.

The increasing importance of the duties of lay inspectors made it highly desirable that a standard of qualification for the position should be established. It was therefore decided that applicants for such positions must pass an open competitive examination in writing, spelling, arithmetic, composition, and practical questions on subjects met with in the daily operation of a packing-house, and that the appointees must be men of sobriety and steady habits, in good health, and not over forty years of age. Judging from the appearance and qualifications of the new appointees, this method is a distinct improvement and will tend to much better work. It is brought about under an amendment to the regulations passed by Order in Council under date of January 8, 1916.

The practice of the periodic transfer of inspectors is working to the advantage of the service. While the department does not authorize such transfers more often than it deems absolutely necessary, owing to the expense and at times the personal discomfort and inconvenience of our officers, yet circumstances arise which make such moves not only advantageous but necessary in order that the work may be better supervised.

In the three large centres, namely, Toronto, Montreal, and Winnipeg, the inspectors in charge of the different establishments meet once a week for the purpose of discussing the work in general. Judging from the results obtained, these meetings should continue, as they tend to uniformity and co-operation—the balance-wheel of success in a service such as this.

From our records in connection with slaughter, the following information is submitted:—

Cattle slaughtered	512,154.	Increase over 1914-15, 11,729 or 2.21 per cent.
Sheep	493,147.	Decrease under 1914-15, 41,025 or 9.84 per cent.
Swine	2,363,693.	Decrease under 1914-15, 244,645 or 9.92 per cent.

The provinces show increases or decreases as follows:—

Province.	Cattle.		Sheep.		Swine.	
	Head.	Per cent.	Head.	Per cent.	Head.	Per cent.
Ontario	+ 38,374	18.14	+ 21,013	14.49	+ 89,447	6.68
Quebec	- 38,417	17.73	- 10,845	11.56	- 2,700	60
Manitoba	+ 6,177	16.95	- 10,078	28.51	- 103,985	20.10
Saskatchewan	+ 3,307	213.87	+ 2,603	61.80	- 83,147	42.70
Alberta	+ 6,685	17.04	- 9,318	37.00	- 150,880	40.04
British Columbia	- 4,868	24.63	- 18,816	40.67	- 28,206	41.26
New Brunswick	- 58	100.00	- 4,078	40.26		
Nova Scotia			- 1,621	100.00		
Prince Edward Island	+ 614	23.28	- 418	3.20	+ 866	3.87

7 GEORGE V, A. 1917

The percentage of slaughter for each province to the total for all Canada:—

Province.	Cattle.	Sheep.	Swine.
	Per cent.	Per cent.	Per cent.
Ontario.....	46·09	41·23	60·44
Quebec.....	32·88	31·94	16·38
Manitoba.....	8·28	6·36	8·67
Saskatchewan.....	·87	1·99	1·89
Alberta.....	8·47	8·69	9·94
British Columbia.....	2·91	5·05	1·70
Maritime Provinces.....	·50	4·84	·98

While the records show an increase in swine killings in Ontario, this is undoubtedly due to the large shipments of live hogs from the western provinces.

CARCASS CONDEMNATIONS.

Cattle.—The number of carcasses condemned this year being 1·95 per cent of total kill against 1·45 per cent last year, it is satisfactory to note that carcasses condemned for tuberculosis only represent 31·20 per cent of total condemned against 40·14 per cent last year.

Those condemned for bruises and imperfect bleeding also show a small decrease.

Calves condemned for immaturity are much higher than last year, being 48 per cent of total condemned against 42 per cent.

Emaciated cattle were sent to slaughter in much larger numbers this year, high prices being no doubt an inducement.

Swine.—It is regrettable that a much larger proportion of hogs were condemned for tuberculosis than last year, the percentage of total carcasses condemned being 61·76 per cent against 53·16 per cent.

It is gratifying to note the decrease in condemnations for hog cholera, 81 carcasses against 1,084 last year.

Carcasses were condemned for *cysticercus cellulosæ* to the extent of 545 against 478 last year.

Sheep.—The increase in sheep condemned is nearly all made up of emaciated and bruised carcasses, possibly caused by overloaded cars during the extremely hot weather.

Portions condemned.—In almost all cases these show increases over last year, and call for no particular comment.

IMPORTS AND EXPORTS.

In studying these figures the first thing we notice is the large amount of beef and pork imported and exported.

To enable our Canadian packers to meet their requirements of bacon hogs for shipment to England, it was necessary from September, 1915, to March 31, 1916, to import singed and scalded dressed hogs from the United States to be cured in Canada and shipped as Canadian-cured United States product, 380,700 dressed hogs weighing around 40,000,000 pounds; also, about 20,000,000 pounds of backs, bellies, hams, etc.,

SESSIONAL PAPER No. 15b

all of which might have been produced in Canada. Instead, we find a decrease in all but two provinces, while hogs touched the highest price on record, viz., \$13 per cwt.

During 1915-16, hogs were from one to two dollars per cwt. higher in Canada than in the United States, and the shipments of live animals across the line did not amount to anything like former years.

While in cattle the export of 241,000 head was largely made up of stockers and feeders, it is unfortunate that these were not retained by Canadian farms.

Our export of bacon for the year amounted to 167,000,000 pounds. The export of beef also shows a large increase over last year, from 29,000,000 to 53,000,000 pounds.

In comparison with Denmark and Ireland, area and possibilities considered, Canada does not show up nearly as well as she should.

KILLINGS.

Year.	Canada.	Denmark.	Ireland.
1912	1,650,966	2,084,786	1,416,490
1913.....	1,464,246	2,215,850	1,181,386
1914.....	2,255,479	2,651,041	1,266,620
1915.....	2,616,461	1,960,965	1,379,003

FRUIT AND VEGETABLES.

The sanitary conditions in the fruit and vegetable canneries have been well maintained, and the quality of the raw material used was quite up to the average.

Considerable work was done during the past year in connection with evaporated apples. Owing to the vigilance of our officers, this product was offered for sale in a much better condition than ever before. The observance of the standard for moisture-content was insisted upon, in consequence of which no complaints have reached this office regarding losses, which were common in other years owing to excessive moisture. The possibilities of a foreign trade in this product are enormous if shippers will only pack a proper article, the chief requirement being to keep down the water-content and to discontinue the practice of sprinkling the apples at the time of packing. Experiments conducted at this office have demonstrated beyond doubt that such a practice will cause a rapid decomposition of the product, irrespective of the condition at time of packing, or method, manner or condition of storing and handling afterwards.

CONDENSED MILK.

There is very little to be said regarding this product. Its very nature compels the manufacturers to maintain their plants in a sanitary condition, otherwise the keeping qualities of the finished article would be seriously affected. There is perhaps no manufactured food which requires such care as this. The supervision begins at the farm on which the milk is produced, and continues until the article is ready for use.

7 GEORGE V, A. 1917

MEAT AND CANNED FOODS DIVISION.

STAFF.

Chief, Meat and Canned Foods Division—R. Barnes, V.S.

Travelling Inspectors, M. and C. F. Division—H. H. Ross, V.S.; M. J. Kellam, V.S.

In charge of Montreal—L. A. Willson, V.S.

In charge of Toronto—F. H. S. Lowrey, V.S.

In charge of Winnipeg—C. D. McGilvray, M.D.V.

In charge of Prince Edward Island—W. J. Pethick, V.S.

Chief Travelling Inspector, Fruit and Vegetable Canneries—C. S. McGillivray.

Canning Inspectors—A. Bowlby, H. S. Switzer, F. W. Gray.

ADDITIONS TO STAFF.

Veterinary Inspectors.—J. O. Allan, V.S.; Wm. Bright, V.S.; M. Chagnon, M.V.; O. Christian, V.S.; R. Clegg, V.S.; I. E. Croken, V.S.; O. S. Dickinson, V.S.; C. M. Flanders, V.S.; S. H. Kesten, V.S.; S. E. Lawrence, V.S.; J. E. LeBlond, V.S.; D. McDonald, V.S.; J. E. Mumford, V.S.; R. Paquette, V.S.; A. Robertson, V.S.; P. E. Simard, M.V.; H. W. Steeves, V.S.; W. F. R. Stubbs, V.S.; W. R. Wood, V.S.; H. M. Younghusband, V.S.

Lay Inspectors.—J. N. Ellah, V.S.; E. C. Oliver, V.S.; J. C. O'Connor, J. Rowntree, Smith Shaw, W. T. Wenborn.

Canning Inspector.—F. W. Gray.

TRANSFERS.

To C. D. Division: Estes, H. R., V.S.; Moynihan, Wm., B.V.Sc.; Symes, J. W., D.V.S.; Tulloch, D. E., M.R.C.V.S.

RESIGNATIONS.

Bright, S. G., V.S.; Fagin, H. W., V.S.; Kesten, S. H., V.S.; MacFadzean, W. B., V.S.; Pook, G. G., V.S.; Swail, L. H., V.S.; Seymour, Wm., V.S.; Whitehead, Geo., B.V.Sc.; Flanders, C. M., V.S.

DISMISSALS.

Graham, W. A. D.; Mallett, H. W.; Paquette, R. S., V.S.; Wall, S. L., V.S.

PROLONGED LEAVE OF ABSENCE.

Ardill, A.; McEwen, N. E., V.S.; Lundie, A. C., V.S.; Nelson, H. D., B.V.S. (On Active Service): Brunet, O., M.V.; Colebourn, H., V.S.; Collet, H. B., V.S.; Daigneault, F. A., M.V.; Douglas, K. L., V.S.; Elliott, H. J., M.D.V.; Finne-
more, C. W., V.S.; Walsh, F. A., V.S.

SESSIONAL PAPER No. 15b

ESTABLISHMENTS UNDER INSPECTION MARCH 31, 1916

No.	Name.	Place.	Inspectors.
1	Armour & Co.....	Hamilton.....	A. C. Ramsay, V.S. J. G. Davidson, V.S. J. E. A. Duhamel, M.V. John Wright.
2A	Matthews-Blackwell, Ltd.....	Hull, P.Q.	J. Langevin, M.V. J. Steen, V.S. A. W. Younghusband, V.S. John Ferrance.
2B	" "	Brantford	W. R. Bell, V.S. G. C. Cockerton, V.S. C. M. Flanders, V.S.
2C	" "	Peterborough.....	W. A. Henderson, V.S. J. E. Bennett, V.S.
2D	" "	Montreal	W. H. James, V.S. M. Chagnon, M.V. G. W. Starnaman, V.S. A. J. Champion. A. E. Hawkins. Geo. Jones.
2E	" "	Toronto	C. S. Anderson, V.S. J. W. Fisher, V.S. J. E. Morse, V.S. W. J. Blainey. J. H. Mumford.
4A	Wm. Davies Co., Ltd.	"	A. R. Torrie, V.S. T. W. R. McFarlane, V.S. D. R. Bone, V.S. F. Fisher, V.S. J. H. George, V.S. Wm. Howard. P. Kingston. J. W. Lee. J. R. Songhurst.
4B	" "	Montreal	C. W. McIntosh, V.S. F. R. Armstrong, V.S. J. E. M. Lefebvre, M.V. W. R. Wood, V.S. J. F. Campeau, M.V. E. Lefebvre. F. O. Piquette. J. W. Webb.
6	Municipal Abattoir.....	Toronto	D. C. Tennant, V.S. A. W. Beach, D.V.S. A. C. Tanner, B.V.S. A. C. Walker, B.V.S. E. E. White.
7	Harris Abattoir Co., Ltd., St. Clair Ave.	"	H. H. Cook, V.S. R. Cook, V.S. I. E. Cook, V.S. W. J. Priden, V.S. P. H. Robinson, V.S. A. Robertson, V.S. Wm. Tennant, V.S. A. J. Hodgins. P. J. Kelly. T. K. Kerr. H. Smith. J. W. Nickola. J. Rowntree.
7A	Harris Abattoir Co., Ltd., Strachan Ave.	"	C. L. Wallace, V.S.

7 GEORGE V, A. 1917

ESTABLISHMENTS UNDER INSPECTION MARCH 31, 1916.—Continued

No.	Name.	Place.	Inspectors.
9	Gunn's, Limited.....	Toronto.....	E. R. Farewell, V.S. Wm. Bright, V.S. D. McDonald, V.S. Chas. Brittain. Edwin Cox. J. N. Ellah, V.S. Ernest Hunter. E. C. Oliver, V.S.
10	F. W. Fearman Co., Ltd.....	Hamilton.....	C. J. Johannes, V.S. C. S. Cain, V.S. H. Garrett, B.V.S. Wm. Lawson, V.S.
11	Ingersoll Packing Co ...	Ingersoll.....	R. D. Orr, V.S. J. E. Mumford, V.S. A. G. Murray, V.S.
13	Whyte Packing Co., Ltd.....	Stratford.....	F. A. McNally, V.S. G. C. Brownridge, V.S.
17	Jones Packing & Prov. Co.....	Smiths Falls.....	J. B. White, V.S.
18	Swift Canadian Co., Ltd.....	Winnipeg	J. D. Ross, V.S. F. C. Bishop, V.S. J. E. Lawrence, V.S. J. H. Shonyo, V.S. J. L. Trudeau, M.V. C. H. Johnston. W. G. Williams.
18B	" " "	Edmonton.....	H. C. Leslie, V.S. R. D. Boast, V.S. G. A. Ledgerwood, V.S. J. H. Part, V.S. P. E. Simard, M.V. H. Christman. E. J. Laidlaw.
18C	" " "	Toronto.....	T. M. Pine, V.S. A. A. Bélanger, M.V. C. S. Dickinson, V.S. T. E. H. Fisher, V.S. W. Kime, V.S. G. P. McKenzie, V.S. F. L. Wingate, V.S. H. M. Younghusband, V.S. A. E. Harvey. Wm. McCabe. J. T. Newton. J. C. O'Connor. Smith Shaw.
19	Gordon, Ironside & Fares Ltd..	Winnipeg.....	F. C. Jones, V.S. H. Pomfret, V.S. J. W. Nichols, V.S. J. G. McDonald, V.S. R. H. Lyon.
19A	" " "	Montreal.....	J. R. Young.
19B	" " "	Moosejaw.....	J. W. Purdy, V.S. J. R. English, V.S. J. E. LeBlond, M.V. R. F. Jackson. A. J. Tapley.
20	Gallagher, Holman & Lafranco.....	Winnipeg.....	A. R. Walsh, V.S. C. Brind, V.S. T. F. Coleman.
21	Western Packing Co., Ltd.....	"	J. R. N. Harrison, V.S. R. B. Dellert, V.S.

SESSIONAL PAPER No. 15b

ESTABLISHMENTS UNDER INSPECTION MARCH 31, 1916.—*Concluded.*

No.	Name.	Place.	Inspectors.
22	Montreal Union Abattoir.....	Montreal.....	E. Dufresne, M.V. C. D. Bancroft, D.V.S. A. R. Douglas, V. S. N. W. Reid, M.V. A. Angellier. H. Beaudoin.
23	P. Burns & Co., Ltd.....	Calgary.....	J. A. McLeish, V.S. O. Christian, V.S. H. C. Storey, V.S. H. W. Steeves, V.S. T. J. McLelland. Gen. Mutton. C. E. Smith. W. T. Wenborn.
23A	P. Burns & Co., Ltd.	Edmonton.....	I. Christian, V.S. W. B. R. Knowles, V.S. F. Lefebvre, M.V. W. H. Wheeler.
23B	" "	Vancouver.....	E. A. Bruce, V.S. J. Dickinson, V.S. J. G. Jervis, B.V.Sc. A. E. Rathford.
24	Wm. Clark Co., Ltd.....	Montreal.....	G. Lemieux, M.V.
25	Montreal Abattoirs Limited	"	J. N. L. Couture, M.V. C. E. Derrine, M.V. E. C. Gauvin, M.V. J. A. Théoret, M.V. Hersch Hunt. Hersch Polak.
27	Gainers, Limited.....	South Edmonton..	R. G. Tupling, V.S. L. R. Walkinshaw.
28	W. Wight & Co.....	Toronto.....	Osborn Brown.
29	N. K. Fairbank Co., Ltd.....	Montreal.....	H. Mizener.
31	Chatham Packing Co., Ltd.....	Chatham.....	J. R. Thompson, V.S. A. A. H. Carley, V. S.
32	R. Taillefer & Cie.....	Montreal.....	D. McDonald.
47	Société S.P.A.	"	H. Morry.
49	Davis & Fraser.....	Charlottetown.....	G. J. Beathfield, V.S.

7 GEORGE V, A. 1917

ESTABLISHMENTS UNDER TEMPORARY INSPECTION, APRIL 1, 1915,
TO MARCH 31, 1916.

Number	Name.	Place.
12	Prince Edward Island Railway.....	Kensington, P.E.I.
15	John Reop.....	Charlottetown, P.E.I.
34	Sussex Packing Co.....	Sussex, N.B.
35	New Brunswick Cold Storage Company.....	St. John, N.B.
36	W. A. Leard.....	Charlottetown, P.E.I.
36B	W. A. Leard.....	Summerside, P.E.I.
40	Aylmer Canning Co.....	Aylmer, Ontario.
41	Prince Edward Island Railway.....	Bradalbane, P.E.I.
48	R. O'Leary.....	Richibucto, N.B.
51	J. H. Myrick & Co.....	Tignish, P.E.I.
52	Sims Packing Co.....	Charlottetown, P.E.I.
53	Prince Edward Island Railway.....	Summerside, P.E.I.
57	P. MacNutt & Son.....	Malpeque, P.E.I.
60	Fred Magee.....	Port Elgin, N.B.
64	P. C. Gallant.....	Summerside, P.E.I.

SESSIONAL PAPER No. 15b

DISEASES FOUND AT ESTABLISHMENTS UNDER INSPECTION.

Diseases.	Cattle.			Sheep.			Swine.			Poultry.
	Car- casses	Por- tions.	Lbs.	Car- casses	Por- tions.	Lbs.	Car- casses	Por- tions.	Lbs.	Lbs.
Abscess.....	17	22,879		15	34		25	2,610		
Actinomycosis.....	40	22,804			1		2	1,008		
Adhesions.....		8,692			374			10,001		
Ascitis.....				1			1			
Arthritis.....	1							4		
Angiomatosis.....		1,825								
Bruises.....	130	56,227	7,806	20	2,565	55	14	17,340	64,372	
Carcinoma.....	4									
Cripples.....	4	150		1	31			6,884		
Cysts.....		243						2,833		
Cysticercus Bovis.....	205	1,842								
" Cellulosæ.....							547	150		
" Ovis.....				3	59					
" Tenuicollis.....					134					
Congestion.....		56			8		2	2,322		
Cirrhosis.....		16						6,020		
Decomposed.....			106,476			4,641			143,280	
Dirty.....		549	353,448			2,771		174	120,983	
Emaciation.....	695			225			70			
Enteritis.....	17			1			101			
Emphysema.....	3	4		1			7	1,000		
Hernia.....							1	116		
Hydraemia.....	46			19						
Hog cholera.....							81			
Immaturity.....	5,075									
Improper bleeding.....	277			83			230			
Inflammation.....	33			8			42			
Icterus.....	5			13			39			
Induration.....								116		
Metritis.....	11			2			13			
Mucoid degeneration...	94						2			
Mammitis.....	5	4						27		
Melanosia.....		6		2			1	20		
Necrosis.....		273			5,973			15,864		
Nephritis.....	31			5			16			
Pyrexia.....	1						3			
Parasites.....		46,826			102,511			100,360		
Pericarditis.....	50			1			10			
Peritonitis.....	59			8			148			
Pleuritis.....	10			3			8			
Pneumonia.....	80			107			210			
Pyæmia or septicæmia.....	135			20			208			
Sexual smell.....							70	524		
Skin diseases.....								1,221		
Sarcoma.....	5			1			6			
Sour.....			95,141			2,220			126,730	
Stale.....	38						10			
Septic infection.....	160						8			
Tuberculosis.....	3,297	22,249		4	42		1,002	780,000		
" pseudo.....				6						
Tumours.....	2	20		2			7	12		
Uraemia.....							12			
Various.....	31	11,313	3,400	18	107		7	400	1,100	
Damaged by fire.....			10							
Total.....	10,560	196,047	560,000	701	112,147	9,708	6,380	651,301	667,000	1,000
Found dead.....	200			417			1,400			100,000

7 GEORGE V, A. 1917

The following summary shows the results of post-mortem inspections of cattle, sheep, and swine from April 1, 1915, to March 31, 1916:—

Cattle marked "Canada Approved"	531,588
Carcasses of cattle "Condemned"	10,566
Percentage of cattle "Condemned"	1.95
Portions of cattle "Condemned"	196,047
Sheep marked "Canada Approved"	402,556
Carcasses of sheep "Condemned"	591
Percentage of sheep "Condemned" .. . . .	.14
Portions of sheep "Condemned"	112,147
Swine marked "Canada Approved"	2,357,111
Carcasses of swine "Condemned"	6,582
Percentage of swine "Condemned" .. . . .	.28
Portions of swine "Condemned"	951,231
Total number of carcasses "Passed"	3,291,255
Total number of carcasses "Condemned"	17,739
Percentage of carcasses "Condemned" .. . . .	.53
Total number of portions "Condemned"	1,259,425

In addition to the animals slaughtered at inspected establishments, the following amounts of dressed and cured meats and lard, etc., were received during the fiscal year from foreign countries:—

	Lb.
Beef	9,046,195
Mutton	449,770
Pork	52,603,260
Lard	4,033,988

During the course of reinspection the following meats were condemned:—

	Cattle.	Sheep.	Swine.	Poultry.
	lb.	lb.	lb.	lb.
Bruised	7,806	55	64,392	.....
Decomposed	106,476	4,641	143,289	.....
Dirty	353,448	2,771	120,983	.....
Sour	95,142	2,239	136,737	.....
Damaged by fire	50	.....	.....	.....
Various	3,468	.....	1,663	2,382
Total	566,390	9,706	467,064	2,382

Total amount condemned on reinspection, 1,045,542 pounds.

SESSIONAL PAPER No. 15b

Customs statistics show that we imported and exported the following:—

	Imports.	Exports.
Cattle (live).....	365	241,578
Sheep ".....	68,564	94,588
Swine ".....	.....	9,925
Beef (pounds).....	15,006,703	53,342,504
Mutton ".....	2,841,838	99,593
Pork ".....	60,502,494	167,671,813
Lard ".....	5,101,356	28,521
Canned meats (pounds).....	306,205	11,047,931

In conclusion, I wish to express my appreciation of the loyal service rendered by all members of the staff, and especially by Dr. Hilton, Chief Veterinary Inspector, and Dr. Barnes, Chief Meat Inspector.

I have the honour to be, sir,

Your obedient servant,

F. TORRANCE,
Veterinary Director General.

BULLETINS PUBLISHED.

"A further contribution on the biology of *Hypoderma Lineatum*," by Seymour Hadwen, D.V.Sc. (Scientific Series, No. 21.)

"Observations on the migration of Warble larvæ through the tissues," by Seymour Hadwen, D.V.Sc. (Scientific Series, No. 22.)

INDEX

	Page.
Abortion, Contagious..	18-19
Agassiz Laboratory	19
Analysis of Disinfectants	15-18
Anthrax	9
Anthrax Statistics	9
Bulletins Published	35
Cattle Mange	8
Cattle Mange Statistics..	8
Condensed Milk	27
Contagious Abortion	18-19
Diseased Imports, Statistics	22
Disinfectants	15-18
Dourine..	7
Dourine Statistics	7-8
Export Inspection Statistics	22
Fruit and Vegetables	27
Glanders..	3-4
Glanders Statistics	4-6
Hog Cholera	12
Hog Cholera Statistics	13-15
Horse Mange..	8
Horse Mange Statistics..	8
Import Inspections from United States and Newfoundland, Statistics	20
Import Inspections from Europe and elsewhere, Statistics	21
Import Testing Statistics	23
Laboratories..	15
Lethbridge Laboratory	19
Mange in Cattle	8
Mange in Cattle Statistics	8
Mange in Horses	8
Mange in Horses Statistics	8
Meat and Canned Foods..	24-26
Meat and Canned Foods, Customs Statistics Imports and Exports	35
Meat and Canned Foods, Diseases found at Establishments under Inspection	33
Meats and Canned Foods Establishments under Inspection	29-31
Meat and Canned Foods Establishments temporarily under Inspection..	29-31
Meat and Canned Foods, Imports and Exports	26-27
Meat and Canned Foods Staff	28
New Methods of Tuberculin Testing	10
Pure bred Imports Statistics	21-22
Rabies	6
Rabies Statistics	6
Sheep Scab	9
Sheep Scab Statistics	9
Staff Changes..	23-24
Staff on Active Service	24
Statistics re Anthrax..	9
" Cattle Mange	8
" Diseased Imports	22
" Dourine	7-8
" Export Inspections	22
" Glanders	3-6
" Hog Cholera	13-15
" Horse Mange..	8
" Import Inspections	20-21
" Import Testing	23
" Pure-Bred Imports	21-22
" Rabies	6
" Sheep Scab	9
" Tuberculosis	10-12
Testing at Saskatoon	10
Tuberculosis	9
Tuberculosis Statistics	10-12

